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EXAMINER

EHNE, CHARLES

ART UNIT	PAPER NUMBER
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2113

DATE MAILED: 06/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/723,204

Applicant(s)

TALAGALA ET AL.

Examiner

Charles Ehne

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-8,10,11,14,16-34,36-40,42,43,46 and 48 is/are rejected.
- 7) ☒ Claim(s) 3,9,12,13,15,35,41,44,45 and 47 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f):
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 17-32 are not limited to tangible embodiments. In view of Applicant's disclosure. Specification paragraph [0029], lines 13-14, the medium is not limited to tangible embodiments. As such, the claim is not limited to statutory subject matter and is therefore non-statutory.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1,2,8,10,11,16-18,24,26,27,32-34,42,43 and 48 are rejected under 35 U.S.C. 102(e) as being unpatentable by Loaiza (7,020,835).

As to claims 1, Loaiza discloses a computerized method comprising:

defining a protection domain for a set of errors using an association between data and first integrity metadata, the protection domain to protect data traversing an

input/output (I/O) datapath having a storage device and a first generation integrity point for a host as opposite endpoints (column 5, lines 29-30 & lines 57-63); and

defining a first sub-domain nested within the protection domain using an association between the data and second integrity metadata, the first sub-domain to further protect data traversing a portion of the datapath having a second generation integrity point as an endpoint (column 7, lines 16-20 & column 8, lines 22-26).

As to claim 2, Loaiza discloses the computerized method of claim 1 further comprising:

defining a second sub-domain nested within the protection domain using an association between the data and third integrity metadata, the second sub-domain to further protect data traversing a portion of the datapath having a third generation integrity point as an endpoint (column 8, lines 38-44).

As to claim 8, Loaiza discloses the computerized method of claim 1, wherein the portion of the datapath protected by the first sub-domain has one of the storage device and host as an opposite endpoint (Figure 3B).

As to claim 10, Loaiza discloses the computerized method of claim 1 further comprising:

detecting a data error within the protection domain using at least one of the first and second integrity metadata (column 8, lines 28-30); and

identifying a portion of the I/O data path as a potential source of the data error (column 7, lines 39-42).

As to claim 11, Loaiza discloses the computerized method of claim 10, wherein detecting a data error comprises:

validating the data at one of the first and second integrity points (column 8, lines 22-26).

As to claim 16, Loaiza discloses the computerized method of claim 1 further comprising:

establishing the first generation integrity point for the host (Figure 3B.220); and
establishing the second generation integrity point for an intermediary component in the datapath (column 8, lines 38-44).

As to claim 17, Loaiza discloses a computer-readable medium having instructions to cause a processor to execute a method comprising:

defining a protection domain for a set of errors using an association between data and first integrity metadata, the protection domain to protect data traversing an input/output (I/O) datapath having a storage device and a first generation integrity point for a host as opposite endpoints (column 5, lines 29-30 & lines 57-63); and

defining a first sub-domain nested within the protection domain using an association between the data and second integrity metadata, the first sub-domain to further protect data traversing a portion of the datapath having a second generation integrity point as an endpoint (column 7, lines 16-20 & column 8, lines 22-26).

As to claim 18, Loaiza discloses the computer-readable medium of claim 17, wherein the method further comprises:

defining a second sub-domain nested within the protection domain using an association between the data and third integrity metadata, the second sub-domain to further protect data traversing a portion of the datapath having a third generation integrity point as an endpoint (column 8, lines 38-44).

As to claim 24, Loaiza discloses the computer-readable medium of claim 17, wherein the portion of the datapath protected by the first sub-domain has one of the storage device and host as an opposite endpoint (Figure 3B).

As to claim 26, Loaiza discloses the computer-readable medium of claim 17, wherein the method further comprises:

detecting a data error within the protection domain using at least one of the first and second integrity metadata (column 8, lines 28-30); and

identifying a portion of the I/O data path as a potential source of the data error (column 7, lines 39-42).

As to claim 27, Loaiza discloses the computer-readable medium of claim 26, wherein detecting a data error comprises:

validating the data at one of the first and second integrity points (column 8, lines 22-26).

As to claim 32, Loaiza discloses the. The computer-readable medium of claim 17, wherein the method further comprises:

establishing the first generation integrity point for the host (Figure 3B.220); and

establishing the second generation integrity point for an intermediary component in the datapath (column 8, lines 38-44).

As to claim 33, Loaiza discloses an apparatus comprising:

means for defining a protection domain for a set of errors using an association between data and first integrity metadata, the protection domain to protect data traversing an input/output (I/O) datapath having a storage device and a first generation integrity point for a host as opposite endpoints (column 5, lines 29-30 & lines 57-63); and

means for defining a first sub-domain nested within the protection domain using an association between the data and second integrity metadata, the first sub-domain to further protect data traversing a portion of the datapath having a second generation integrity point as an endpoint (column 7, lines 16-20 & column 8, lines 22-26).

As to claim 34, Loaiza discloses the apparatus of claim 33 further comprising:

means for defining a second sub-domain nested within the protection domain using an association between the data and third integrity metadata, the second sub-domain to further protect data traversing a portion of the datapath having a third generation integrity point as an endpoint (column 8, lines 38-44).

As to claim 40, Loaiza discloses the apparatus of claim 33, wherein the portion of the datapath protected by the first sub-domain has one of the storage device and host as an opposite endpoint (Figure 3B).

As to claim 42, Loaiza discloses the apparatus of claim 33 further comprising:

means for detecting a data error within the protection domain using at least one of the first and second integrity metadata (column 8, lines 28-30); and

means for identifying a portion of the I/O data path as a potential source of the data error (column 7, lines 39-42).

As to claim 43, Loaiza discloses the apparatus of claim 42, wherein the means for detecting a data error comprises:

means for validating the data at one of the first and second integrity points (column 8, lines 22-26).

As to claim 48, Loaiza discloses the apparatus of claim 33 further comprising:

means for establishing the first generation integrity point for the host (Figure 3B.220); and

means for establishing the second generation integrity point for an intermediary component in the datapath (column 8, lines 38-44).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 4-7, 14, 20-23, 30, 36-39 and 46 are rejected under 35 U.S.C. 103(a) as being obvious over Loaiza taken in view of Morrison (6,931,576).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2).

As to claims 4, 20 and 36 Loaiza discloses a second sub-domain nested within the protection domain using an association between the data and third integrity metadata, the second sub-domain to further protect data traversing a portion of the datapath having a third generation integrity point as an endpoint (column 8, lines 38-44).

Loaiza fails to disclose wherein the third integrity metadata is operable to detect a subset of the set of data errors.

Morrison discloses a data integrity device that provides error protection for data transmitted between a host and a data storage system (Abstract, lines 3-12).

Morrison's data integrity device is able to detect a subset of the set of data errors (column 7, lines 20-24 & column 8, lines 10-14).

It would have been obvious to one of ordinary skill in this art at the time of invention by applicant to implement Loaiza's data integrity detection system with Morrison's data integrity device. A person of ordinary skill in the art would have been motivated to make the modification because many different errors can corrupt data integrity (Morrison: column 1, lines 29-31) and Morrison's data integrity devices provides detection of such errors (Morrison: column 2, lines 14-18).

As to claims 5, 21 and 37, Loaiza discloses a second sub-domain nested within the protection domain using an association between the data and third integrity metadata, the second sub-domain to further protect data traversing a portion of the datapath having a third generation integrity point as an endpoint (column 8, lines 38-44). Loaiza fails to disclose wherein the first integrity metadata is operable to detect a first subset of the set of data errors.

Morrison discloses a data integrity device that provides error protection for data transmitted between a host and a data storage system (Abstract, lines 3-12).

Morrison's data integrity device is able to detect a subset of the set of data errors (column 7, lines 20-24).

It would have been obvious to one of ordinary skill in this art at the time of invention by applicant to implement Loaiza's data integrity detection system with Morrison's data integrity device. A person of ordinary skill in the art would have been motivated to make the modification because many different errors can corrupt data integrity (Morrison: column 1, lines 29-31) and Morrison's data integrity devices provides detection of such errors (Morrison: column 2, lines 14-18).

As to claim 6, 22 and 38, Morrison discloses the computerized method of claim 5, wherein the second integrity metadata is operable to detect a second subset of the set of data errors (column 8, lines 10-14).

As to claim 7, 23, and 39, Morrison discloses the computerized method of claim 6, wherein the first and second subsets together are operable to detect the set of data errors (column 5, lines 34-36 & column 7, lines 20-24 & column 8, lines 10-14).

As to claims 14, 30 and 46, Loaiza discloses detecting a data error within the protection domain using at least one of the first and second integrity metadata (column 8, lines 28-30). Loaiza fails to disclose wherein the method further comprises: retrying a data transfer at an integrity point prior to the potential source of the data error.

Morrison discloses a data integrity device that provides error protection for data transmitted between a host and a data storage system (Abstract, lines 3-12). Morrison also discloses wherein the method further comprises: retrying a data transfer at an integrity point prior to the potential source of the data error (column 14, lines 9-10).

It would have been obvious to one of ordinary skill in this art at the time of invention by applicant to implement Morrison's method of retrying a data transfer at an

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integrity point prior to the potential source of the data error with Loaiza's data integrity protection system. A person of ordinary skill in the art would have been motivated to make the modification because resending a data transfer is faster than flushing the I/O stream and restarting the entire operation (Morrison: column 13, lines 40-41).

Allowable Subject Matter

Claims 3,9,12,13,15,35,41,44,45 and 47 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Ehne whose telephone number is (571)-272-2471. The examiner can normally be reached on Monday-Friday 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Beausoliel can be reached on (571)-272-3645. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


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